

Workshop III: Data Assimilation, Uncertainty Reduction, and Optimization for Subsurface Flow

Monday May 22, 2017

- 8:00–8:50 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:50–9:00 *Welcome and Opening Remarks*
- 9:00–10:00 **Dean Oliver** (Uni Research)
Minimization for sampling and uncertainty quantification
- 10:00–10:15 *Break*
- 10:15–11:15 **Femke Vossepoel** (Technische Universiteit te Delft)
Towards data assimilation in coupled flow-geomechanical models
- 11:15–11:30 *Break*
- 11:30–12:30 **Mike Hoversten** (Chevron)
TBA
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:30 **Andrew Stuart** (California Institute of Technology)
Blackbox Hierarchical Inversion
- 3:30–3:45 *Break*
- 3:45–4:45 **Xiao-Hui Wu** (ExxonMobil)
Modeling Subsurface Uncertainty: Practical Considerations
- 5:00–6:30 *Poster Session & Reception (Hosted by IPAM)*

Tuesday May 23, 2017

- 8:00–9:00 *Continental Breakfast*
- 9:00–10:00 **Albert Reynolds** (University of Tulsa)
Combining Data Assimilation with Markov Chain Monte Carlo for Uncertainty Quantification
- 10:00–10:15 *Break*
- 10:15–11:15 **David Echeverria Ciaurri** (IBM Research)
Uncertainty Is on My Side: Two Views of Field Development and Performance Evaluation
- 11:15–11:30 *Break*

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- 11:30–12:30 **Geir Evensen** (IRIS)
Properties of iterative ensemble smoothers and strategies for conditioning on production data
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:30 **Jan-Dirk Jansen** (Delft University of Technology)
Model-based production optimization and history matching – some (not so) recent developments
- 3:30–3:45 *Break*
- 3:45–4:45 *TBA*

Wednesday May 24, 2017

- 8:00–9:00 *Continental Breakfast*
- 9:00–10:00 **Daniel Tartakovsky** (Stanford University)
Multi-fidelity simulations of multiphase flow under uncertainty
- 10:00–10:15 *Break*
- 10:15–11:15 **Dongbin Xiu** (Ohio State University)
Numerical Approximation Algorithms for Big Data
- 11:15–11:30 *Break*
- 11:30–12:30 **Yalchin Efendiev** (Texas A&M University - College Station)
Local reduced-order models and applications to data assimilation and inverse problems
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:30 **Lou Durlofsky** (Stanford University)
Optimization and Reduced-Order Modeling of Geological Carbon Storage Operations
- 3:30–3:45 *Break*
- 3:45–4:45 **Jincong He** (Chevron)
A New Approach to Analyzing Data Acquisition Programs Before and After Data Come In

Thursday May 25, 2017

- 8:00–9:00 *Continental Breakfast*
- 9:00–10:00 **Omar Ghattas** (University of Texas at Austin)
Scalable methods for optimal control of PDEs with random coefficient fields
- 10:00–10:15 *Break*

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- 10:15–11:15 **Behnam Jafarpour** (University of Southern California (USC))
Pattern-Based Calibration of Complex Subsurface Flow Models
- 11:15–11:30 *Break*
- 11:30–12:30 **Jeremy Brandman** (Exxon Research and Engineering Company)
The characterization of reservoirs using hypothetical remote tracer data
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:30 **Pallav Sarma** (Tachyus)
Redistribution of Steam Injection in Heavy Oil Reservoir Management to Improve EOR Economics, Powered by a Unique Integration of Reservoir Physics and Machine Learning
- 3:30–3:45 *Break*
- 3:45–4:45 **Olwijn Leeuwenburgh** (Netherlands Organization for Applied Scientific Research (TNO))
Ensemble optimization – theory, applications and challenges in subsurface flow

Friday May 26, 2017

- 8:00–9:00 *Continental Breakfast*
- 9:00–10:00 **Youssef Marzouk** (Massachusetts Institute of Technology)
Parallel local approximation MCMC and certified dimension reduction for large-scale Bayesian inverse problems
- 10:00–10:15 *Break*
- 10:15–11:15 **Peter-Jan van Leeuwen** (University of Reading)
Nonlinear data-assimilation in high-dimensional spaces: exploring the typical set
- 11:15–11:30 *Break*
- 11:30–12:30 **Tapan Mukerji** (Stanford University)
Computing Value of Information in Earth Sciences: A Simulation-Regression approach
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:30 **Stein Krogstad** (SINTEF Applied Mathematics)
Adjoint-based sensitivities in MRST (Matlab Reservoir Simulation Toolbox) with application to multi-segment well completion design
- 3:30–3:45 *Break*
- 3:45–4:45 **Xin Liu** (Shell)
Development and application of multiobjective steepest descent method for water flooding optimization

